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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,119	09/10/2003	Mitsuo Kawasaki	9281-4620	3593

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EXAMINER	
BERNATZ, KEVIN M	
ART UNIT	**PAPER NUMBER**
1773	

DATE MAILED: 02/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/659,119	KAWASAKI ET AL.	
	Examiner	Art Unit	
	Kevin M Bernatz	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/10/03; 1/15/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Examiner's Comments

1. The Examiner notes that the language in claim 8 directed to the pole portions (i.e. "wherein the magnetic pole portion comprises one of a ... or b) an upper magnetic pole layer succeeding the upper core layer and a gap layer located between the upper magnetic pole layer and the lower core layer" is confusing because it is unclear as to what applicants' Markush listing is intended to encompass. I.e. are there three choices, "a lower magnetic pole layer succeeding the lower core layer", option "a) ...", and option "b) ..."? Or are there two choices (a and b), with the lower magnetic pole layer succeeding the lower core layer not actually part of the Markush group? It appears that the intent is two choices, option (a) being an upper and lower pole layer with a gap layer therebetween and option (b) being just an upper pole layer, with the gap layer between the upper pole layer and the lower *core* layer. Applicants are suggested to reword the claim to better clarify that these are the two Markush options.

Drawings

2. Applicants' Drawings filed September 10, 2003 are accepted.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 – 6 and 8 are rejected under 35 U.S.C. 102(a) as being anticipated by Kanada et al. (U.S. Patent App. No. 2003/0048582 A1) – and –

5. Claims 1 – 6 and 8 are rejected under 35 U.S.C. 102(a) as being anticipated by Yazawa et al. (JP 2003-077723 A). See U.S. Patent App. No. '582 A1, which is the English language equivalent of JP '723 A.

Regarding claims 1, 2 and 8, Kanada/Yazawa et al. disclose a thin film magnetic head comprising a pole portion meeting applicants' claimed structural limitations (*Figures 1 and 6*), wherein one or both of the pole layers comprise a plated magnetic film comprising Co and Fe (*Paragraphs 0094, 0095 and 0113*), wherein the plated magnetic film comprises a plurality of columnar crystal structures extending in a film thickness direction (*Paragraph 0273 and Figure 26*).

Regarding claims 3 - 5, Kanada/Yazawa et al. disclose Fe concentrations meeting applicants' claimed limitations (*Paragraph 0113 and Figures*).

Regarding claim 6, Kanada/Yazawa et al. disclose crystal diameters meeting applicants' claimed limitations (*Paragraph 0127 and Figures*).

6. Claims 1 – 6 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamaguchi et al. (U.S. Patent App. No. 2004/0080868 A1).

Regarding claims 1, 2 and 8, Yamaguchi et al. disclose a thin film magnetic head comprising a pole portion meeting applicants' claimed structural limitations (*Figure 11b and Paragraphs 0097 - 0127*), wherein one or both of the pole layers comprise a plated magnetic film comprising Co and Fe (*Figures and Paragraph 0103*).

Regarding the limitation "wherein the plated magnetic film comprises a columnar crystal extending in a film thickness direction", it has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily or inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. Therefore, the *prime facie* case can be rebutted by ***evidence*** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In the instant case, Yamaguchi et al. disclose crystalline FeCo films having substantially identical composition materials (*Figures and Paragraphs 0033 and 0103*)

made by a substantially identical process (*e.g. plating*) for a substantially identical use (*e.g. high saturation magnetization magnetic pole pieces*).

Therefore, in addition to the above disclosed limitations, the presently claimed property of columnar crystal structures would have inherently been present because the disclosed and prior art products are substantially identical in composition, method of making and intended use.

Regarding claims 3 - 5, Yamaguchi et al. disclose Fe concentrations meeting applicants' claimed limitations (*Paragraphs 0033 and 0103 and Figures*).

Regarding claim 6, the Examiner deems that the films would inherently possess the claimed crystal diameters for the reasons noted above.

7. Claims 1, 2 and 6 are rejected under 35 U.S.C. 102(a) as being anticipated by Funayama et al. (U.S. Patent App. No. 2003/0197982 A1).

Regarding claims 1 and 2, Funayama et al. a plated magnetic film comprising Co and Fe (*Paragraphs 0078 – 0082 and 0155 – 0160*), wherein the plated magnetic film comprises a plurality of columnar crystal structures extending in a film thickness direction (*Paragraph 0154 – 1060 and Figure 16*).

Regarding claim 6, Funayama et al. disclose crystal diameters meeting applicants' claimed limitations (*Paragraph 0150*).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kanada et al. as applied above, and further in view of Sato et al. (U.S. Patent App. No. 2003/0151851 A1) – and –

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yazawa et al. as applied above, and further in view of Sato et al. ('851 A1)

Kanada/Yazawa et al. are relied upon as described above.

Neither of the above disclose a surface roughness of the FeCo film meeting applicants' claimed limitations.

However, Sato et al. teach that it is known to form pole pieces of FeCo material to possess surface roughness values meeting applicants' claimed limitations inorder to insure that the surface is sufficiently flat for use as a pole piece in a thin-film magnetic head (*Paragraphs 0102 and 0145*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kanada/Yazawa et al. to use a FeCo layer meeting applicants' claimed surface roughness limitations as taught by Sato et al. since such a surface roughness is necessary to insure that the FeCo material is sufficiently flat for use as a pole piece in a thin-film magnetic head.

11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. as applied above, and further in view of Funayama et al. ('982 A1).

Yamaguchi et al. is relied upon as described above.

While the Examiner deems there is sound basis for the position of inherency regarding the crystal grain size of the magnetic layer, the Examiner acknowledges that Yamaguchi et al. fail to explicitly disclose the crystal grain size of the magnetic layer.

In the event that the crystal grain size would not inherently meet the claimed size limitation, the Examiner notes that Funayama et al. provides explicit teaching to control the crystal grain size to meet applicants' claimed limitations inorder to insure good soft magnetic properties of the columnar magnetic films (*Paragraphs 0148 – 0151*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Yamaguchi et al. to insure that the crystal grains meet applicants' claimed size limitations as taught by Funayama et al. inorder to insure good soft magnetic properties of the columnar magnetic films.

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. as applied above, and further in view of Sato et al. ('851 A1)

Yamaguchi et al. are relied upon as described above.

Yamaguchi et al. fail to disclose a surface roughness of the FeCo film meeting applicants' claimed limitations.

However, Sato et al. teach that it is known to form pole pieces of FeCo material to possess surface roughness values meeting applicants' claimed limitations inorder to insure that the surface is sufficiently flat for use as a pole piece in a thin-film magnetic head (*Paragraphs 0102 and 0145*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Yamaguchi et al. to use a FeCo layer meeting applicants' claimed surface roughness limitations as taught by Sato et al. since such a surface roughness is necessary to insure that the FeCo material is sufficiently flat for use as a pole piece in a thin-film magnetic head.

13. Claims 3 – 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Funayama et al. as applied above, and further in view of Sasaki et al. (U.S. Patent App. No. 2003/0206369 A1).

Funayama et al. is relied upon as described above.

Funayama et al. fail to disclose using a FeCo alloy meeting applicants' claimed Fe concentration.

However, Sasaki et al. teach using a FeCo alloy meeting applicants' claimed composition for a magnetic pole since such an alloy possesses a high saturation magnetization (*Paragraphs 0132 – 0133*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Funayama et al. to use a FeCo

concentration meeting applicants' claimed limitations as taught by Sasaki et al. since such an alloy possesses a high saturation magnetization.

14. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Funayama et al. as applied above, and further in view of Sato et al. ('851 A1).

Funayama et al. is relied upon as described above.

Funayama et al. fail to disclose a surface roughness of the FeCo film meeting applicants' claimed limitations.

However, Sato et al. teach that it is known to form pole pieces of FeCo material to possess surface roughness values meeting applicants' claimed limitations inorder to insure that the surface is sufficiently flat for use as a pole piece in a thin-film magnetic head (*Paragraphs 0102 and 0145*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Funayama et al. to use a FeCo layer meeting applicants' claimed surface roughness limitations as taught by Sato et al. since such a surface roughness is necessary to insure that the FeCo material is sufficiently flat for use as a pole piece in a thin-film magnetic head.

15. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kudo et al. (U.S. Patent App. No. 2002/0106533 A1) in view of Hitachi, LTD (JP 62-226413) and Funayama et al. ('982 A1). See provided Derwent Abstract Translation of JP '413 A.

Regarding claim 8, Kudo et al. disclose a thin film magnetic head comprising a pole portion meeting applicants' claimed structural limitations regarding (*Figures 1D and 6*).

Kudo et al. fail to teach a FeCo film meeting applicants' claimed columnar structure limitations for use as one or both of the magnetic pole portions.

However, Hitachi, LTD teach that columnar magnetic films including Fe and Co can be used as a magnetic pole portion of a magnetic head inorder to provide high magnetic flux for high density recording (*Abstract Translation*). Furthermore, Funayama et al. provides an explicit teaching of columnar FeCo alloys, wherein the columnar structure extends in the film thickness direction (*Paragraph 0154 – 1060 and Figure 16*), wherein the disclosed alloys possess advantageous soft magnetic properties (*Paragraphs 0018 – 0042*).

It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kudo et al. to use a columnar FeCo alloy meeting applicants' claimed columnar structure limitations as taught by JP '413 and Funayama et al., since such an alloy can provide advantageous soft magnetic properties, such as a high magnetic flux for high density recording.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB
February 8, 2005

Kevin M. Bernatz, PhD
Primary Examiner